

CLAIMS

1. A fuel cell power plant comprising:

at least one fuel cell (37) comprising an anode (32A), a cathode (32B), and an electrolyte membrane (31) gripped therebetween, the fuel cell (37) generating an electric power by an electrochemical reaction through the electrolyte membrane (31) of hydrogen supplied to the anode (32A) and oxygen supplied to the cathode (32B), and

a device (40, 18, 27A, 27B, 28, 29) which condenses water vapor staying around at least the anode (32A) after the fuel cell (37) has stopped power generation.

2. The power plant as defined in Claim 1, wherein the condensing device (40, 18, 27A, 27B, 28, 29) is a cooling device (40, 18, 27A, 27B, 28, 29) which cools a fuel cell (37).

3. The power plant as defined in Claim 2, wherein the power plant further comprises a sensor (10, 30) which detects a temperature of the fuel cell (37), and a programmable controller (8) programmed to stop operation of the cooling device (40, 18, 27A, 27B, 28, 29) when the temperature of the fuel cell falls to a predetermined temperature (S4, S17).

4. The power plant as defined in Claim 3, wherein the fuel cell (37) is formed from a fuel cell (37) which generates power within a temperature range from

60 degrees Centigrade to 90 degrees Centigrade and the predetermined temperature is set not higher than 60 degrees Centigrade.

5. The power plant as defined in any one of Claim 2 through Claim 4, wherein the fuel cell (37) further comprises a coolant passage (35C) which cools the anode (32A), and the cooling device (40, 18, 27A, 27B, 28, 29) comprises a coolant recirculation passage (4) connected to the coolant passage (35C), a heat exchanger (6) which cools the coolant, and a pump (5) which recirculates coolant cooled by the heat exchanger (6) to the coolant passage (35C) via the recirculation passage (4).

6. The power plant as defined in Claim 5, wherein the fuel cell (37) further comprises a hydrogen passage (35A) which supplies hydrogen to the anode (32A), the hydrogen passage (35A) being formed parallel to the coolant passage (35C) in the fuel cell (37), and the recirculation passage (4) is connected to the coolant passage (35C) such that the coolant flow direction in the coolant passage (35C) is identical to the hydrogen flow direction in the hydrogen passage (35A).

7. The power plant as defined in any one of Claim 2 through Claim 4, wherein the power plant is installed in a vehicle, the vehicle comprises a vehicle compartment and an air conditioning device (41) which supplies cooled air to the vehicle compartment, the fuel cell (37) further comprises an air passage (35B) which supplies oxygen as air to the cathode (32B), and the cooling

device (40, 18, 27A, 27B, 28, 29) further comprises a device (18, 27A, 27B, 28, 29) which supplies cooled air from the air conditioning device (41) to the air passage (35B).

8. The power plant as defined in any one of Claim 1 through Claim 4, wherein the fuel cell (37) further comprises a hydrogen passage (35A) which supplies hydrogen to the anode (32A), and the power plant further comprises an outside air entry blocking device (2C, 15, 20) which blocks entry of outside air to the hydrogen passage (35A) after the fuel cell (37) has stopped power generation.

9. The power plant as defined in Claim 8, wherein the outside air entry blocking device (2C, 15, 20) comprises a valve (2C, 20) which seals the hydrogen passage (35A).

10. The power plant as defined in Claim 9, wherein the outside air entry blocking device (2C, 15, 20) comprises a water trap (15) which allows gas discharge from the hydrogen passage (35A) while blocking entry of gas to the hydrogen passage (35A).

11. The power plant as defined in Claim 10, wherein the outside air entry blocking device (2C, 15, 20) further comprises a valve (14) which discharges gas discharged from the hydrogen passage (35A) into the atmosphere without passing through the water trap (15).

12. The power plant as defined in any one of Claim 1 through Claim 4, wherein the fuel cell (37) further comprises a hydrogen passage (35A) which supplies hydrogen to the anode (32A), and the power plant further comprises a catalytic burner (16) connected to the hydrogen passage (35A) which burns anode effluent discharged from the hydrogen passage (35A).

13. The fuel cell power plant as defined in any one of Claim 1 through Claim 4, wherein the power plant further comprises a separate charge storage device (11, 13) which supplies power to the condensing device (40, 18, 27A, 27B, 28, 29).